



Cavanaugh Macdonald  
CONSULTING, LLC

*The experience and dedication you deserve*

# **SAN BERNARDINO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

## **Actuarial Audit Results**

Brent Banister, PhD, FSA, FCA, MAAA, EA  
Larry Langer, ASA, FCA, MAAA, EA

May 2, 2024





# Purpose of an Audit

- Actuarial services are very important services to SBCERA, but also highly technical and very specialized
  - Difficult for Board to evaluate the details of Segal's work
  - As fiduciaries, Board is responsible for the accuracy and reliability of the actuarial work
  
- Actuarial audits address this need
  - Two Types: replication and peer review (sample life)
  - Replication performed for SBCERA
    - Most thorough and comprehensive analysis
    - Able to quantify any differences identified
  
- Includes a review of actuarial assumptions and methods in addition to replication of valuation and accounting report results



# Our Approach to the Audit

- Maintain a constructive mindset
- Identify any possible suggestions that might improve the technical valuation process as well as the understanding of, or confidence in, the actuarial results
- Avoid comments that could be considered “nit picky” or just personal preference
- Goal of the audit is to improve the actuarial process and final work product



# Documents Reviewed

- 6/30/2023 Actuarial Valuation Report
- 6/30/2023 Survivor Benefit Valuation Report
- 6/30/2023 GASB 67 Report
- 2019-2022 Experience Study



# Specifics Reviewed

- Actuarial Assumptions
- Actuarial Methods
- Membership Data
- Actuarial Valuation Results
- Actuarial Valuation Reports
- Experience Study Report
- GASB (accounting) Report



# Actuarial Assumptions

Two general types of actuarial assumptions:

- **Economic assumptions:** These include the valuation interest rate (expected return on plan assets), assumed rates of salary increase, price inflation, wage inflation, and increases in total payroll. The selection of economic assumptions should conform to ASOP No. 27 “Selection of Economic Assumptions for Measuring Pension Obligations”.
- **Demographic assumptions:** These include the assumed rates of retirement, mortality, termination, and disability. The selection of demographic assumptions should conform to ASOP No. 35 “Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations”.



# Actuarial Assumptions

- Economic Assumptions Reviewed:
  - Price Inflation
  - Retiree Cost-of-Living Increases
  - Investment Return Assumption
  - General Wage Increases
  - Individual Salary Scale
  - Payroll Growth Assumption
  
- The assumptions for the 6/30/2023 valuation are reasonable in our opinion
  - A reasonable range of economic assumptions exists
  - Economic assumptions are consistent with those in other similar large public retirement systems



# Actuarial Assumptions

- Demographic Assumptions reviewed:
  - Rates of Retirement
  - Rates of Mortality
  - Rates of Termination/Refund of Employee Contributions
  - Rates of Disability
  - Probability of Marriage, Age Difference of Spouse, and Other Minor Assumptions
  
- The assumptions for the 6/30/2023 valuation are reasonable in our opinion
  - Reflect typical patterns of behavior in other similar large public retirement systems
  - Reflect specific features of SBCERA plan design and operation
  - We offered some ideas for future studies



# Actuarial Methods

Four broad considerations when establishing a funding policy for a pension plan:

- ***Sufficiency***: The funding target should be the value of benefits accrued to date so that benefits can be paid when due.
- ***Intergenerational equity***: Taxpayers and members should pay for worker's pensions while those workers are providing their services. The goal is to fund for the worker's benefits over the worker's career.
- ***Stability of contributions***: Generally governmental entities prefer predictable funding patterns. While stable contributions are easy to budget for, stability should not be achieved at the expense of the first two considerations.
- ***Accountability and transparency***: Each component of the funding policy should be clear on the intent and effect.



# Actuarial Methods

- A funding policy is composed of the following actuarial methods:
  - Actuarial Cost Method
  - Asset Valuation Method
  - Amortization of Unfunded Actuarial Accrued Liability Method
  - Output Smoothing Methods
  - Contribution Lag Policy
  
- Taken together, the components used for SBCERA satisfy the four broad considerations on the previous page
  
- Each method is also consistent with the relevant ASOP requirements



# Actuarial Methods

- Entry Age Normal is nearly universal for public sector plans
- Actuarial assets use semiannual returns – driven by statutory crediting requirements. Reasonable method.
- Layered amortization method is reasonable
- Output smoothing has been analyzed and recommended by Segal to ameliorate employer contribution rates. Must coordinate with statutory requirements.
- A contribution lag policy could be considered to explicitly reflect the passage of time from the valuation date to the date contributions are made

***We believe the array of actuarial methods used by Segal comply with Actuarial Standards of Practice, are generally reasonable, and are well thought out.***



# Membership Data

Our analysis of the 6/30/2023 valuation data includes comparisons of relevant data fields in the raw data files provided by SBCERA to the final valuation data used by Segal for 100% of the records. Some examples of data fields reviewed include date of birth, service, salary, plan tier, benefit amount, and form of payment. We did not find any concerning issues with the data during our review.

	(1) Valuation Report or Segal Data Files	(2) SBCERA Raw Data Files	(1) / (2)
<b>Active Members</b>			
Count	22,084	22,085	100.00%
Average Age	43.7	43.7	100.00%
Average Service	10.4	10.4	100.00%
<b>Inactive Vested Members</b>			
Count	10,324	10,324	100.00%
Average Age	43.7	43.7	100.00%
<b>Retired Members</b>			
Count	11,526	11,526	100.00%
Average Age	70.4	70.4	100.00%
Average Monthly Benefit	4,423	4,423	100.00%
<b>Disabled Members</b>			
Count	1,700	1,700	100.00%
Average Age	65.7	65.7	100.00%
Average Monthly Benefit	4,462	4,462	100.00%
<b>Beneficiaries</b>			
Count	2,163	2,166	99.86%
Average Age	72.6	72.6	100.00%
Average Monthly Benefit	2,358	2,356	100.08%

# Actuarial Valuation Results – Retirement Plan



- As part of the actuarial audit, CavMac used the data provided by Segal to reproduce the valuation liabilities used for the cost calculations
  
- Acceptable thresholds for replication results:
  - Present value of future benefits: 1 to 2%
  - Actuarial liability: 5% or less
  - Normal cost: 5% to 7%
  
- Results in total are generally very close. We also looked at a finer level of detail than is displayed, including detailed results for selected individuals.
  
- We present our analysis on the next slide



# Actuarial Valuation Results – Retirement Plan

## Present Value of Future Benefits

	Segal			CavMac			Difference
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total	
Actives	\$ 7,124,274	\$ 2,488,218	\$ 9,612,492	\$ 7,138,739	\$ 2,498,106	\$ 9,636,846	0.25%
Term Vested	633,952	73,341	707,293	630,652	73,447	704,100	-0.45%
In Payment	9,150,521	50,238	9,200,759	9,087,851	49,508	9,137,360	-0.69%
Total	\$ 16,908,747	\$ 2,611,797	\$ 19,520,544	\$ 16,857,243	\$ 2,621,062	\$ 19,478,305	-0.22%

## Actuarial Accrued Liability

	Segal			CavMac			Difference
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total	
Actives	\$ 5,741,265	\$ 769,465	\$ 6,510,730	\$ 5,709,040	\$ 801,611	\$ 6,510,651	0.00%
Term Vested	633,952	73,341	707,293	630,652	73,447	704,100	-0.45%
In Payment	9,150,521	50,238	9,200,759	9,087,851	49,508	9,137,360	-0.69%
Total	\$ 15,525,738	\$ 893,044	\$ 16,418,782	\$ 15,427,544	\$ 924,567	\$ 16,352,110	-0.41%

## Normal Cost

	Segal			CavMac			Difference
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total	
Actives	\$ 198,504	\$ 160,424	\$ 358,928	\$ 197,483	\$ 157,905	\$ 355,388	-0.99%

# Actuarial Valuation Results – Retirement Plan



- We reviewed the funding calculations:
  - Asset calculations
  - UAAL determination and amortization
  - Contribution rate development
  
- We ran calculations to determine the reasonableness of the member contribution rates
  
- *Based on the results of our review, overall, we find the actuarial liabilities, normal cost measures and member contribution rates to be reasonable.*



# Actuarial Valuation Results – Survivor Benefits

- As part of the actuarial audit, CavMac used the data provided by Segal to reproduce the valuation liabilities used for the cost calculations
- Valuation software is developed with a focus on traditional retirement benefits, so ancillary benefits like these sometimes require approximation or simplification - as a result, we do not expect to replicate the survivor benefits as closely as the retirement benefits
- Results in total are sufficiently close and confirm the reasonableness of Segal's work
- We present our analysis on the next slide



# Actuarial Valuation Results – Survivor Benefits

<b>Present Value of Future Benefits</b>				
	<u>Segal</u>	<u>CavMac</u>	<u>Difference</u>	
Current Recipients	\$ 23,092,000	\$ 23,255,034	0.71%	
Future Recipients	<u>9,638,000</u>	<u>10,188,612</u>	<u>5.71%</u>	
Total	\$ 32,730,000	\$ 33,443,646	2.18%	
<b>Actuarial Accrued Liability</b>				
	<u>Segal</u>	<u>CavMac</u>	<u>Difference</u>	
Current Recipients	\$ 23,092,000	\$ 23,255,034	0.71%	
Future Recipients	<u>4,473,000</u>	<u>4,674,869</u>	<u>4.51%</u>	
Total	\$ 27,565,000	\$ 27,929,903	1.32%	
<b>Normal Cost</b>				
	<u>Segal</u>	<u>CavMac</u>	<u>Difference</u>	
Biweekly Normal Cost per Active Member	\$ 1.80	\$ 1.72	-4.44%	
Estimated Employer/Employee Contributions	456,000	435,000	-4.61%	



# Actuarial Valuation Results – Survivor Benefits

- Statutes require the normal cost to be funded every year
- These benefits are very well funded and there is a significant surplus
- Consideration could be given to determining if the assumed death rates for actives track with actual experience, fully recognizing that the active population size is too small for credible analysis of mortality rates
- If there are actuarial gains in most years it may be appropriate to reduce the assumed death rates
- *Based on the results of our review, overall, we find the actuarial liabilities and normal cost measures to be reasonable.*



# Actuarial Valuation Reports

- The American Academy of Actuaries has issued Actuarial Standards of Practice which deal with measuring pension obligations and communicating the results (ASOP No. 4, 23, 27, 35, 41, 44, 51, and 56)
- Those standards list specific elements to be included, either directly or by reference to other documents, in pension actuarial communications
- The 6/30/2023 Actuarial Valuation Report and Survivor Benefit Valuation Report for SBCERA generally provides sufficient information for another actuary to understand what was done and to assess the reasonableness of the results
- *In our review of the reports, we found them to be in compliance with the applicable ASOPs.*



# Experience Study Report

- The American Academy of Actuaries has issued Actuarial Standards of Practice which deal with economic and demographic assumptions (ASOP No. 27 and 35)
- The Experience Study Report generally complied with these requirements
- We suggest that Segal include some indication of the exposures (number of members studied) and decrements (number of deaths, retirements, etc.) to help provide context for the credibility
- *In our review of the report, we found it to be in compliance with the applicable ASOPs.*



# GASB Report

- We reviewed June 30, 2023 GASB 67 Report
- This report uses the same liabilities as we reviewed in the actuarial valuations, so we were able to confirm the numbers disclosed
- We reviewed the report for the inclusion of needed disclosures items such as the sensitivity analysis. *We found the report to be complete and appropriate.*



# Audit Conclusions

*We find the actuarial valuation results to be generally reasonable and accurate based on the assumptions used. The valuation was performed by qualified actuaries and was performed in accordance with the principles and practices prescribed by the Actuarial Standards Board.*



***THANK YOU***